Remarks

The Office Action mailed November 29, 2004 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 2-3, 5-11, 13-17, 19-25, and 27-37 are now pending in this application. Claims 15 and 31 have been amended.

No extension of time is believed to be required for entry of this Amendment. However, if an extension of time and/or additional fees are required for entry of this Amendment, authorization is hereby given to consider this a request for the necessary extension of time and/or to charge the Deposit Account shown on the fee calculation sheet the necessary additional fees to enter this amendment.

Applicants gratefully acknowledge the allowance of Claims 5-6, 13-14, 19-20, 27-28, and 32-35. Applicants also gratefully acknowledge the indication of allowable subject matter in Claims 3, 11, 17, and 25, however, Applicants submit that it is unnecessary to rewrite these claims in independent form as a result of amendments made to Claims 15 and 31, as is explained below.

The rejection of Claims 2, 7, 15-16, 21, 29-31, and 36-37 under 35 U.S.C. § 102(b) as being anticipated by Larson (U.S. 5,365,465) is respectfully traversed.

Larson is directed to a method that converts an n-bit floating point number to a logarithmic representation, the number having a first set of bits assigned to a mantissa, and a second set of bits assigned to an exponent (Abstract). To perform a conversion of an FP mantissa to a corresponding LN fraction, the upper look-up bits of the mantissa are used as an address into a look-up table. In the look-up table, each address is mapped into a corresponding SEED value which is the exact value of the logarithmic fraction for the high bits value of the mantissa. Additionally, the address maps to a SLOPE value, which is pre-determined by computing the difference between the current SEED and the previous SEED.

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Second, an interpolator computes the LN value corresponding to the low-order bits of the mantissa using a multiplier. The multiplier multiplies the low order bits by the SLOPE in order to interpolate the lower value of the logarithmic fraction. Finally, the SEED and the interpolated value are combined in an adder to form an LN fraction of a given FP number. (Col. 6, lines 27-42.)

Larson teaches that, for linear interpolation with the requirement that the output of ALU be accurate to 1 LSB, it is required that the curvature height between the SEEDs must be less than 1LSB of the desired accuracy. Col. 6, lines 60-63 and Figs. 3 and 5. Fig. 5 in particular illustrates that the interpolation error value in the method taught by Larson is the difference between the true logarithmic function 152 and the interpolated line 150, col. 7, lines 23-25. The maximum error occurs at the midpoint of two look-up addresses, see col. 8, lines 18-21. as well as Figs. 3 and 5. As is readily observed from these figures, the method taught by Larson always results in an errors having either zero magnitude, or an error that always has the same algebraic sign. In other words, the approximations taught by Larson are biased.

By contrast, Applicants' Claim 15, as herein amended, recites "... compute a value of $\log(x)$ for a binary floating point representation of x stored in said memory utilizing the first degree polynomial in the binary mantissa m, wherein $\log(x)$ is a function of a distance between the reference point a_i and the binary mantissa m and wherein the first degree polynomial is selected to produce unbiased errors..." (see specification as originally filed at page 7, lines 1-20). Applicants' Claim 31 has been similarly amended. Larson does not teach or suggest a first degree polynomial selected to produce unbiased errors. Thus, it is submitted that Claims 15 and 31, as herein amended, are patentable over Larson.

Claims 16, 21, 30, and 36 depend directly or indirectly upon independent Claim 15. When the recitations of Claims 16, 21, 30 and 36 are considered in combination with the recitations of Claim 15, it is submitted that Claims 16, 21, 30, and 36 are likewise patentable over Larson.

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Claims 2, 7, 29, and 37 depend directly or indirectly upon independent Claim 31. When the recitations of Claims 2, 7, 29, and 37 are considered in combination with the recitations of Claim 31, it is submitted that Claims 2, 7, 29, and 37 are likewise patentable over Larson.

For the above reasons, it is requested that the rejection of Claims 2, 7, 15-16, 21, 29-31, and 36-37 under 35 U.S.C. §102(b) as being anticipated by Larson be withdrawn.

The rejection of Claims 8-10 and 22-24 under 35 U.S.C. §103(a) as being obvious over Larson in view of Wallschlaeger (U.S. 5,345,381) is respectfully traversed.

As noted by the Office, Larson does not disclose that the methods taught therein can be utilized in a computed tomography scanner for generating an image of an object from acquired projection data of the object. Moreover, as described above, Larson also fails to teach or suggest a first degree polynomial selected to produce unbiased errors.

As indicated by the Office, Wallschlaeger discloses the use of the logarithm function in a computed tomography scanner for generating an image of an object. However, Wallschlaeger is directed broadly to computer tomography methods and apparatus, and does not teach or suggest any particular method for determining or computing the logarithm function. Most particularly, Wallschlaeger adds nothing to Larson to teach or suggest a first degree polynomial selected to produce unbiased errors.

For the above reasons, it is submitted that Claims 15 and 31, as herein amended, are patentable not only over Larson, but also over the combination of Larson in view of Wallschlaeger.

Claims 22-24 depend directly or indirectly upon independent Claim 15. When the recitations of Claims 22-24 are considered in combination with the recitations of Claim 15, it is submitted that Claims 22-24 are likewise patentable over Larson in view of Wallschlaeger.

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Claims 8-10 depend directly or indirectly upon independent Claim 31. When the recitations of Claims 8-10 are considered in combination with the recitations of Claim 31, it is submitted that Claims 8-10 are likewise patentable over Larson in view of Wallschlaeger.

For the above reasons, it is requested that the rejection of Claims 8-10 and 22-24 under 35 U.S.C. §103(a) as being obvious over Larson in view of Wallschlaeger be withdrawn.

The objection of Claims 3, 11, 17, and 25 as being dependent upon a rejected base claim is respectfully traversed.

It is submitted that Claims 15 and 31, as herein amended, are allowable for the reasons described above. Claims 17 and 25 are indirectly dependent upon Claim 15 and Claims 3 and 11 are indirectly dependent upon Claim 31. It is thus submitted that Claims 3, 11, 17, and 25 are allowable as written, because Claims 15 and 31 are allowable as explained above.

For the above reasons, it is requested that the objection to Claims 3, 11, 17 and 25 as being dependent upon a rejected base claim be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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